

REMARKS

Applicants respectfully request reconsideration of the pending claims.

The office action rejected claims 1-22 under 35 USC 102(b) as being anticipated by U.S. Patent Number 4,947,690 ("Cleveland"). In summary, the applicants have amended Claim 1 to bring out the inherent meaning of the term "secured." Specifically, Claim 1 defines a motion detector having a fastener, and a motion sensor substantially immovably secured to one of the surfaces of the fastener. Cleveland shows no such device.

Instead, Cleveland shows a motion sensor 15 movably connected with a bolt member 18. As shown in figure 2, the Cleveland sensing element 15 has a housing 14 that is connected to a shaft 16. The shaft extends within a bolt member 18 to connect with an annulet 20. Although coupled with the bolt 18, the annulet 20 permits the shaft 16 and thus, its attached sensor 15 and housing 14, to rotate relative to the bolt member 18. Such a connection clearly cannot be considered to immovably secure the sensor 15 to the bolt 18—it moves.

The application description consistently notes that the sensor is immovably secured because it is immovably connected to the fastener. For example, lines 9-27 of page 10 describe different ways to secure the sensor to an internal wall of a fastener, such as by ultrasonically welding, soldering, and using an adhesive. All of these ways clearly provide an immovable coupling to the fastener. Lines 23 and 24 note that any "conventional means consistent with the goals of various embodiments may be used to secure the inertial sensor 14 to the bore wall." Clearly, those means include the immediately previously noted means, while the goals include ensuring accurate readings along one or more specific axes of sensitivity.

In fact, securing a motion sensor to a fastener in the manner defined by Claim 1 is exactly what Cleveland sought to avoid. Specifically, the background discusses problems of immovably securing a motion sensor to its underlying item. Column 1, lines 23-29 discuss how the accelerometer must be rotated with the cable, and that such a process is cumbersome. Alignment problems also are discussed in at column 1, lines 30-45. Cleveland then continues in its Summary to say that its invention solves these problems by having an accelerometer that is "free to rotate about a shaft" Accordingly, securing the sensor as required by Claim 1 is contrary to the teachings of Cleveland.

Claim 1 therefore is allowable in view of the cited art. In a similar manner, dependent claims 2-9 also are allowable for the same reasons. Despite this, dependent claims 2-9 add further limitations not discussed or suggested by Cleveland. Several are discussed below by example.

Claim 6 defines a motion detector in which an interior bore of the fastener is filled with a fill material. Cleveland discloses no such apparatus. The office action suggests, however, that Cleveland adds an epoxy to serve that function. Such a characterization is inaccurate, however, because the epoxy actually is used to secure a cap screw 42 to the housing structure 14 (see column 3, lines 1-3). At no time is the epoxy used to fill any bore within the bolt 18.

Claim 7 defines a motion detector having sense axes aligned substantially normal or perpendicular to the longitudinal axis of the fastener. Cleveland makes no mention of any such issue. In fact, the Cleveland sensor rotates and thus, its sense axis potentially could not be fixed relative to any axis. In a manner similar to its comments to Claim 5, the office action suggests that Cleveland discloses this additional limitation, but does not say how or where such limitation is taught.

As a final example, Claim 8 defines a motion detector having connection detection circuitry that is capable of determining if the fastener is coupled with an object. Once again, Cleveland makes no such suggestion or disclosure of any need for such functionality, or any apparatus performing such a function. The office action suggests that Cleveland teaches such functionality, but does not specifically point to the Cleveland text having making such a disclosure. Instead, the office action generally refers to the majority of the text of the Description of The Preferred Embodiment, without any elaboration.

Amended independent claims 10 and 16 also are allowable for the same reasons as discussed above with regard to claim 1 because, among other things, they respectively require that a sensing means (Claim 10), or motion sensor (Claim 16) be immovably secured to a coupling means (Claim 10) or fastener (Claim 16). In addition, their dependent claims also are allowable for the same reasons as discussed above.

Independent Claim 21 defines a motion detector having its motion sensor within the interior of the fastener. As shown in Figures 1, 2, and 4, and discussed throughout its text, Cleveland discloses its sensor 15 and housing 14 as being exterior to the bolt 18. Specifically, rather than position the sensor 15 within the bolt 18, a shaft 16, which is a separate component from the sensor 15 and housing 14, is within the bolt 18. The sensor 15 is exterior to the bolt 18. Accordingly, Claim 21 and its dependent Claim 22 also are allowable in view of the cited art.

The application thus is in condition for allowance and such action is earnestly requested. Applicants request that the examiner contact the applicants' attorney,

Appl. No. 10/849,605
Amendment dated September 1, 2005
Reply to office action of August 9, 2005

Steven Saunders, if the examiner feels it will assist examination of the pending claims.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "St. Saunders", written over the typed name.

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